

4/24/09 CP

Multiple Choice*Identify the choice that best completes the statement or answers the question.***Solve the equation.**

_____ 1. $4|2x - 2| + 3 = 19$

a. $x = 2\frac{1}{4}$ or $x = -1$

c. $x = 2\frac{1}{4}$ or $x = -2\frac{1}{2}$

b. $x = 2\frac{1}{4}$ or $x = 3$

d. $x = 3$ or $x = -1$

_____ 2. $49x^2 + 16 = 0$

a. $-\frac{4}{7}i, \frac{4}{7}i$

c. $-\frac{7}{4}i, \frac{7}{4}i$

b. $-\frac{4}{7}, \frac{4}{7}$

d. $-\frac{16}{49}i, \frac{16}{49}i$

_____ 3. Suppose $f(x) = 4x - 2$ and $g(x) = -2x + 1$.

Find the value of $\frac{f(-5)}{g(3)}$.

a. 2

b. $4\frac{2}{5}$

c. -2

d. $\frac{10}{11}$

_____ 4. through $(0, -3)$ and perpendicular to $y = -\frac{3}{4}x + 2$.

a. $y = -\frac{3}{4}x - 3$

b. $y = -\frac{4}{3}x - 3$

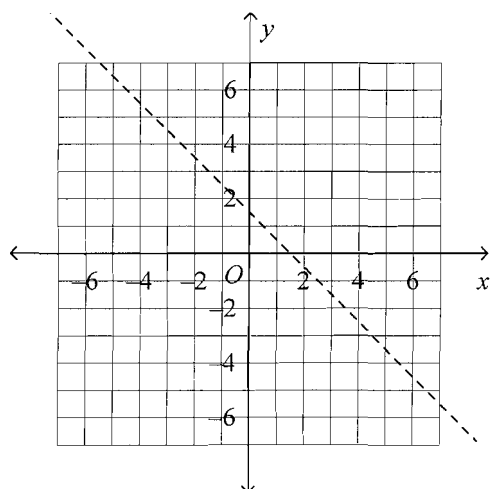
c. $y = \frac{4}{3}x - 3$

d. $y = \frac{3}{4}x - 3$

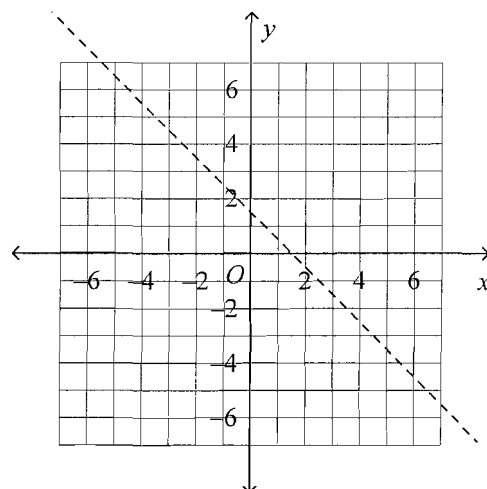
Graph the inequality.

5. $2x + 2y < 3$

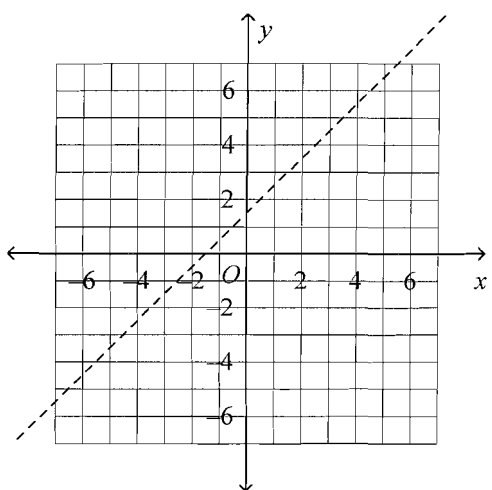
a.



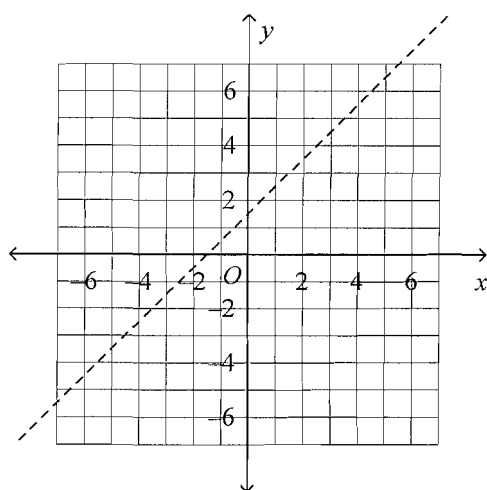
c.



b.



d.

**Use the elimination method to solve the system.**

6.
$$\begin{cases} -2x + 2y = -1 \\ 2x - 2y = 2 \end{cases}$$

a. no solutions

b. $(-8, 3)$ c. $(8, -3)$

d. infinite solutions

Foil

7. $f(x) = (3x - 2)(4x + 6)$

a. $12x^2 - 12$ b. $12x^2 + 10x - 12$ c. $-6x^2 + 18x - 12$ d. $10x - 12$

_____ 8. Solve by factoring.

$$4x^2 + 23x - 35 = 0$$

a. $-7, \frac{5}{4}$

b. $-7, 4$

c. $7, -\frac{4}{7}$

d. $\frac{5}{4}, -\frac{4}{7}$

_____ 9. Find the missing value to complete the square.

$$x^2 + 22x + \underline{\hspace{2cm}}$$

a. 22

b. 484

c. 121

d. 14,641

Rewrite the equation in vertex form._____ 10. $y = x^2 + 10x + 19$

a. $y = (x + 10)^2 + 14$

c. $y = (x + 10)^2 - 6$

b. $y = (x + 5)^2 - 6$

d. $y = (x + 5)^2 + 44$

Solve the equation._____ 11. $-2x^2 + 5x + 10 = 0$

a. $\frac{4}{5} \pm \frac{\sqrt{210}}{4}$

c. $\frac{5}{4} \pm \frac{\sqrt{105}}{4}$

b. $\frac{5}{2} \pm \frac{\sqrt{105}}{2}$

d. $\frac{5}{4} \pm \frac{\sqrt{52}}{2}$

Simplify the expression._____ 12. $(-2)^{-3}$

a. -8

b. $-\frac{1}{8}$

c. $\frac{1}{8}$

d. 6

_____ 13. $(3xy^3)^2(xy)^6$

a. $9x^8y^{12}$

b. $3x^8y^{12}$

c. $2x^3y^{12}$

d. $9x^8y^9$

_____ 14. Find the zeros of $y = x(x + 4)(x + 2)$.

a. 0, -4, -2

c. -4, -2, 4

b. 0, 4, 2

d. -4, -2

_____ 15. Write a polynomial function in standard form with zeros at -2, -4, and -3.

a. $f(x) = x^3 + 9x^2 + 26x + 24$

c. $f(x) = x^3 + 9x^2 + 26x + 14$

b. $f(x) = x^3 + 24x^2 + 9x + 26$

d. $f(x) = x^3 + 11x^2 + 168x + 14$

- _____ 16. An initial population of 565 quail increases at an annual rate of 23%. Write an exponential function to model the quail population.
- a. $f(x) = 565(0.23)^x$ c. $f(x) = 565(23)^x$
b. $f(x) = (565 \cdot 0.23)^x$ d. $f(x) = 565(1.23)^x$
- _____ 17. Find the annual percent increase or decrease that $y = 0.35(2.3)^x$ models.
- a. 230% increase c. 30% decrease
b. 130% increase d. 65% decrease
- _____ 18. Suppose you invest \$1800 at an annual interest rate of 6.9% compounded continuously. How much will you have in the account after 1.5 years?
- a. \$1,996.28 b. \$506.42 c. \$5,383.03 d. \$2,892.88

Write the equation in logarithmic form.

- _____ 19. $7^2 = 49$
- a. $\log 49 = 2$ c. $\log 49 = 2 \cdot 7$
b. $\log_7 49 = 2$ d. $\log_2 49 = 7$

Evaluate the logarithm.

- _____ 20. $\log_7 \frac{1}{49}$
- a. 7 b. -1 c. 2 d. -2

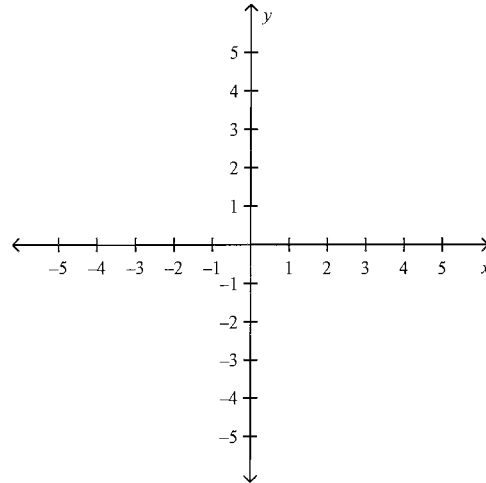
Write the expression as a single logarithm.

- _____ 21. $4 \log_b w + 5 \log_b t$
- a. $\log_b (w^4 + t^5)$ c. $\log_b (w^4 t^5)$
b. $\log_b (wt^4 + 5)$ d. $(4 + 5) \log_b (w + t)$
- _____ 22. Solve $125^{9x-2} = 150$.
- a. -1.8847 b. -0.1069 c. 0.3375 d. 1.0378
- _____ 23. Solve $\log(4x + 13) = 0$.
- a. -3 b. $\frac{1}{4}$ c. -12 d. $-\frac{13}{4}$
- _____ 24. Solve $\log 3x + \log 5 = 0$. Round to the nearest hundredth if necessary.
- a. 0.07 b. 1.67 c. 15 d. 0.6

Completion*Complete each statement.*

25. Graph $y = \frac{-1}{2}(x+5)^2 - 3$

Identify the vertex,
axis of symmetry and
one additional point.

**Short Answer**

26. Is the relation $\{(-4, 2), (5, -4), (-3, -4), (-2, 5), (2, 2)\}$ a function? Explain.

Essay

27. A model for the height of a toy rocket shot from a platform is $y = -16x^2 + 85x + 10$, where x is the time in seconds and y is the height in feet.

- Find the zeros of the function.
- About how high does the rocket fly before hitting the ground? Explain.

Other

28. In a particular region of a national park, there are currently 360 deer, and the population is decreasing at an annual rate of 13%.
- Write an exponential function to model the deer population.
 - Explain what each value in the model represents.
 - Predict the number of deer that will be in the region after five years. Show your work.

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- 1) D
- 2) A
- 3) B
- 4) C
- 5) C
- 6) A
- 7) B
- 8) A
- 9) C
- 10) B
- 11) C
- 12) B
- 13) A
- 14) A
- 15) A

- 16) D
- 17) B
- 18) A
- 19) B
- 20) D
- 21) C
- 22) C
- 23) A
- 24) A

25) Graph

26) $y=5$

27) $x = -.12, 5.43$

123 ft

28) $y = 360 (.87)^x$

$y = 179$